Ryanbear Math Story + Contest

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1097 posts

Sep 11, 2023, 11:28 PM • 1 | #1

This post is a celebration for 1500 FTW rating. I reached 1500 FTW a while ago but took a long time to write the math contest.
Note: my writing skills aren't that good

math story

4th grade

Every week, my mom taught me and some other people a lot of math, including the quadratic formula, basic divisibility rules, and distance speed time problems. This was to prepare for contests like MO and MIC.
Rating: 8/10

problems I struggled on

1. If 8 people each handshake each other, how many handshakes will happen.
2. Factorize $x^2 - 7x + 6$.

5th grade

I heard of the AMC8 and decided to mock last year's AMC8. I failed and got an 8 without guessing. I then finished every intro book except for geometry. After reading the books, I became a combo main with subject distribution CANG.
After that, I mocked every single AMC8 and kept track of my scores in a spreadsheet.
Rating: 11/10

problems I struggled on

1. If $n \equiv 3 \pmod 8$ and $n \equiv 1 \pmod 5$, find all values of n.
2. Let ADE be a triangle. Create point B on AD and C on AE such that $BC \parallel DE$. Given that $BC = 3, AB = 4, DE = 9$, find BD

6th grade

I joined my school's competition math club, where I learned a lot of useful formulas, like coordbash + shoelace, generalized vietas, the law of sines/cosines, and telescoping. I also did the AMC8 and was satisfied with my score. I started mocking AMC10s but didn't do the actual AMC10 because my mom thought I was too bad for it. I started taking competition math seriously in 6th.
Rating: 7/10

problems I struggled on

I didn't struggle that much because the math club was relatively easy.
1. Let there be a sequence a such that $a_n = 2a_{n-1} + 3a_{n-2}$. If $a_1 = 1, a_2 = 2$, find a close form for a.

7th grade

I joined my school's competition math club again, but this time, I got placed in a way harder class. It was around Olympiad level and I could barely understand, so I didn't learn as much compared to previous grades. I had to relearn almost all the concepts later. I also failed math contests, barely missing AIME, AMC8 DHR, and MATHCOUNTS Chapter qualification.
A while after these competitions, one of my classmates started challenging me to FTW games regularly (I already had an AoPS account for AMC8 registration). At the start, I didn't really like it because I couldn't do the problems fast enough (5s), but when I got better, I started enjoying FTW and played with other people. On May 28, 2022, I got gold icosahedron with 1090 rating (I only remember this because it was on the say day as 2022 MMT), and then continued grinding FTW.
I also did an online class that was normal difficulty, but the geometry parts were extremely hard. This class improved my synthetic geometry skills because I had to draw auxiliary lines for 90% of the problems.
Over the summer, I wondered what else was in AoPS beside FTW, so I checked out the community tab and did some problems in MSM. I also found about fun forms through other profiles, which caused me to waste a lot of time there.
Rating: 10/10 now, but 4/10 for just 7th grade

problems I struggled on

1. Prove that $\frac{a}{b+c} + \frac{b}{a+c} + \frac{c}{a+b} \geq \frac{3}{2}$
2. Suppose r is a real number for which $\left\lfloor r + \frac{19}{100} \right\rfloor + \left\lfloor r + \frac{20}{100} \right\rfloor + \left\lfloor r + \frac{21}{100} \right\rfloor + \cdots + \left\lfloor r + \frac{91}{100} \right\rfloor = 546$. Find $\lfloor 100r \rfloor$. (For real x, $\lfloor x \rfloor$ is the greatest integer less than or equal to x.) – 1991 AIME P6
3. What is the minimum value of $f(x) = |x - 1| + |2x - 1| + |3x - 1| + \cdots + |119x - 1|$? – 2010 AMC12A P22

8th grade

I joined my school's math competition club again, but this time, it was way too easy, and I didn't learn anything. During the AMC10s, I somehow managed to make 0 and 1 silly on the A and B, respectively, allowing me to quality for the AIME. I started grinding AIME mocks, but because AIME takes a lot of time, I only did around 10 mocks. I threw the actual AIME and got 4 less than my mock scores. My subject distribution also changed to ACNG or ANCG (I forgot which). Because of my FTW grind, I managed to do very well in the MATHCOUNTS competition series, barely qualifying for state CDR at the end.
I did this small competition called 3MT. Someone else knew me from FTW and AoPS Forums, so he invited me to the unofficial FTW discord server, where I got to know some orz aopsers. I used this server to play many mass games.
In my school, nobody was playing FTW that much compared to last year, but then an orz 7th grader in my school made a teams meeting chat where he told everyone to play FTW games. When this chat was created, around ten people were playing FTW, but several months later, there were only three active people (including me). Thanks to these people, I got onto the FTW leaderboard for games played near the end of 8th grade.
Near the end of 8th grade, I also stated working on Olympiad math for the first time since 7th grade math club. I read the first couple chapters of EGMO and then reread it a few months later, and then reread it again a few months later. I also read MONT once. I tried out a few olympiad NT problems and really enjoyed them, so I became an NT main with subject distribution NACG.
In 8th grade summer, I attended AwesomeMath G2 and C2. In G2, I learned a lot of stuff, like homothety. I also learned a lot in C2, but I found G2 more fun and understandable. This caused my subject distribution to change to NAGC.
Rating: 8/10

problems I struggled on

1. Let $ABCD$ be a parallelogram with $AC = BC$. A point P is chosen on the extension of ray AB past B. The circumcircle of ACD meets the segment PD again at Q. The circumcircle of triangle APQ meets the segment PC at R. Prove that lines CD, AQ, BR are concurrent. – 2021 ISL G1
2. Determine all pairs (x, y) of integers such that
$$1 + 2^x + 2^{2x+1} = y^2.$$
– 2006 IMO P4

Note: I didn't struggle on any olympiad combo problems because I only did 3 of them.

I will be hosting a math competition called the BADMC (beans are delicious math contest). It has 12 problems with roughly increasing difficulty and each problem is 1 point. To submit, you can DM your answers to me on AoPS or on discord (my username is ryanbear1434). You have until October 1st 2023 to submit your answers. You can submit your answers in multiple posts, but you cannot correct the answers after you submitted them. When submitting, you can say if you want to be anonymous if you get lower than a certain score.
Do not judge the problem quality of this test; this is the 3rd contest I'm writing problems in and the 1st contest that actually released.

Leaderboard

Anonymous - 4
Anonymous - 3
Anonymous - 1

Solutions: https://cdn.artofproblemsolving.com/attachments/e/3/7e01a91a7af1285b47c850541f0858a5fbd9a2.pdf

Attachments:
Math_Contest_1.pdf (130kb)
Math_Contest_Sols.pdf (160kb)

This post has been edited 4 times. Last edited by ryanbear, Oct 5, 2023, 6:33 PM